

April 16, 2015

CH2M HILL Plateau Remediation Company 2420 Stevens Center Place P.O. Box 1600 Richland, WA 99352 Attn.: Tracey A. Burch

Subject: Geotechnical Laboratory Testing Services, Data Deliverable for SDG # WA070120150007, Rev. 0

Enclosed is the final report on geotechnical analyses performed by RJ Lee Group in conjunction with PBS Engineering and Environmental, Inc. (PBS) for Sample Delivery Group number (SDG #) WA070120150007.

General Set Comments

RJ Lee Group received from CH2M-Hill Plateau Remediation Company (CHPRC) 1 sample to be tested for geotechnical analysis at the Columbia Basin Analytical Laboratories. There are no SIRs associated with this SDG.

The CHPRC sample, in SDG # WA070120150007, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG#	Geotechnical Lab Sample #
B2YRN4	WA070120150007	H-0022

This project deliverable, provided in Attachment 1, contains the reports of the requested analytical results and a copy of the associated chain of custody for the sample listed above.

The analytical results provided in this deliverable relate only to the items tested. The sample was received in acceptable condition unless otherwise noted in the attached report(s).

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

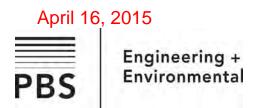
April 16, 2015

Dr. Heinz Huber Date

Laboratory Manager, Columbia Basin Analytical Laboratories

If you have any questions, please feel free to contact us at 509-545-4989 or email at hhuber@rjleegroup.com.

Attachment 1 PBS Geotechnical laboratory Testing Results, SDG # WA070120150007, dated March 18, 2015



March 18, 2015

RJ Lee Group, Inc. Attn: Mr. Larry Lockrem Columbia Basin Analytical Laboratories 2710 North 20th Avenue Pasco, Washington 93301

Re: Geotechnical Laboratory Testing Results

Sample Delivery Group No. WA070120150007

PBS Project No. 63737.000

Dear Mr. Lockrem:

In accordance with your request, PBS Engineering and Environmental Inc. (PBS) is providing you with the results of our recent geotechnical laboratory testing. Our services were provided in accordance with the request provided with Sample Delivery Group (SDG) number WA070120150007.

We performed the following test:

Hydraulic Conductivity – Constant Head (ASTM D2434)

The appropriate permeability/hydraulic conductivity test (ASTM D2434 or D5084) was selected based on the texture characteristics of the sample received, per section 3.2.2 of the contract. The test was performed in general accordance with the above-mentioned ASTM Standards, except for the following cases:

Hydraulic Conductivity – Constant Head (ASTM D2434): The sample was not tested
in a permeameter cylinder appropriately sized based on the maximum particle size of the
soil due to the lack of adequate sample volumes provided. The test was performed in the
closest appropriately sized cylinder available for the volume of sample provided, per the
direction of RJ Lee and CHPRC.

April 16, 2015

Mr. Larry Lockrem

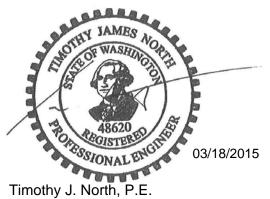
Re: Geotechnical Laboratory Testing Results - WA070120150007

March 18, 2015 Page 2 of 2

We trust this letter meets your current needs. If you have any questions, or wish to further discuss our observations, conclusions, and recommendations, please contact us at 509.942.1600.

Sincerely,

PBS Engineering and Environmental, Inc.



Project Geotechnical Engineer

Nathan A. Bowles, P.E. Senior Engineer/Operations Manager

TN/NB

Report of Laboratory Testing - Hydraulic Conductivity - Constant Head Attachments:

Chain of Custody

63797.000



REPORT OF LABORATORY TESTING

Report to: CH2M-Hill - Plateau Remediation **Date:** 3/18/2015

2420 Stevens Center Place Sample Delivery Group No.: WA070120150007

P.O. Box 1600 Richland, WA 99352

F13-046

Sample Authorization No.:

Project:CHPRC LaboratoryProject No.:63797.000Report of:Hydraulic Conductivity - Constant Head (ASTM D2434)Lab Tech:B. Russell

Items Received:

One sample was provided to us containing soil material obtained by you, the client.

We performed the following test:

Hydraulic Conductivity - Constant Head (ASTM D2434).

The hydraulic conductivity of the representative soil was determined in the laboratory using the above referenced samples. The samples were prepared for the permeameter and all the required measures were taken. Air was evacuated from the samples and were then saturated with low mineral content water. The manometer system was attached and a stable head condition was attained. The quantity of flow, water temperature, water head and time were measured. This was repeated, if necessary, to establish an accurate region of laminar flow with velocity.

LABORATORY TEST RESULTS

Hydraulic Conductivity - Constant Head (ASTM D2434)

Customer Sample Number	Laboratory Sample Number	Date of Analysis	Quantity of flow discharged (cm ³)	Dist. between manometers, L (cm)	Specimen area, A (cm²)	Total discharge time, t (sec)	Head dif. betw. manometers, h (cm)	Avg. Hydraulic Conductivity, k (cm/s)
B2YRN4	H-0022	2/5/2015	895	7.62	45.843	300	51.5	9.97E-03
-								

SHEET 1 OF 1	REVIEWED BY: T. North, P.E.	
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Columbia Basin Analytical Laboratories | 2710 North 20th Avenue, Pasco, WA 93301 | 509.545.4989

				7	12-31-14 1335	(S)	SOIL	B2YRN4
					SAMPLE DATE SAMPLE TIME	MATRIX* SA	SAMPLE NO.	SAMP
			IONIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SAMPLE ANALYSIS	ND/OR STORAGE	SPECIAL HANDLING AND/OR STORAGE	x=Other
				1000g	VOLUME			V=Vegetation W=Water
				-	NO. OF CONTAINER(S)			S=Soil SE=Sediment T=Tissue
			" HOOLZ	Split Spoon Liner	TYPE OF CONTAINER	re not releasable per	Goods Regulations but are not releasable per DOE Order 458.1.	Solids L=Liquid O=Oil
		,	7	6 Months	HOLDING TIME	ot be regulated for R/IATA Dangerous	concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous	DS=Drum DS=Drum
	(120150007	MACTOI	None	PRESERVATION	ZARDS/ REMARKS aterial at	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at	MATRIX*
		N/A		Z/A			RJ)EE - GEOTECHNICAL	RJJEE - GEO
	0.	BILL OF LADING/AIR BILL NO.	1000	8	OFFSITE PROPERTY NO.	ÓF		SHIPPED TO
ORIGINAL O	GOVERNMENT VEHICLE	COA 300085	ACTUAL SAMPLE DEPTH		FIELD LOGBOOK NO. イルゲールー 507-038-91	T II	0. N/A	ICE CHEST NO.
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DATA	PRICE CODE 8H	PROJECT COORDINATOR TODAK, D	TELEPHONE NO. 376-6427		COMPANY CONTACT TODAK, D	TC CO	R.J. Crow/CHPRC	COLLECTOR
PAGE 1 OF 1	F13-046-078	QUEST	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	OF CUSTO	CHAIN	on Company	CH2MHill Plateau Remediation Company	CH2
			40000	20150	2400			

12-31-14 1335

ABORATORY SECTION	EINQUISHED BY/R	NQUISHED BY/R	DINQUISHED BY/R	Thanks	LINQUISHED BY/R	F.M. Hall/CHP	LINQUISHED BY/R	SSU	I INQUISHED BY /B		LINQUISHED BY/R	HAIN OF POSSESSION
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Geotechnical Laboratory Sample Receipt

Date/T	ime Received: 1/7/15 11:19	
SDG#:	WA010120150007	
Work (Order Number:	
SAF#_	F13-046-078	
Shippi	ng Container Identification:	
1.	Custody Seals on shipping container intact?	Yes [X] No []
2.	Custody Seals dated and signed?	Yes (1) No []
3.	Chain-of-Custody record present?	Yes [/] No []
4.	Cooler temperature	
5.	Vermiculite/packing materials is	Wet [] Dry []
6.	Number of samples in shipping container:	
7.	Samples have:	
	hazard labels	
	custody sealsappropriate sam	aple labels
8.	Samples are:	
	in good condition for the geotechnical tests rec	uiredleaking/desiccated
	broken or disaggregated	
9.	Were any anomalies identified in sample receipt?	Yes [] No [/]
10.	Description of anomalies (include sample numbers):	
11.	Rad Screen Performed:	
12.	Chain of Custody # <u>P13-046-078</u>	
Comn	ments:	
Samp	ole Custodian/Laboratory: CLOPe2	Date: //7//5
Telep	honed to:On	by